

WHAT IS CLAIMED IS:

1. A spark plug comprising:

a tubular housing;

5 a central electrode supported by said tubular housing in said tubular housing with electrical insulation therebetween;

an earth electrode extending from one end of said tubular housing;

a chip, arranged at an end surface of said earth electrode to face said central electrode, for providing a spark gap between said
10 central electrode and said chip, said chip including a novel metal; and

a fused junction layer between said earth electrode and said chip including components of said chip and said earth electrode to fix said chip to said earth electrode, wherein a cross-sectional area of
15 said chip at a tip thereof on the opposite side of said fused junction layer is not less than 0.12 mm² and not more than 1.15 mm², and a length from said end surface to a top surface of said tip is not less than 0.3 mm² and not more than 1.5 mm², and wherein said fused junction layer has substantially a conical outer surface continuously
20 connecting a peripheral outer surface of said chip to said end surface of said earth electrode with a radius on a sectional plane along an axis of said chip

2. The spark plug as claimed in claim 1, wherein if it is assumed
25 that a maximum width of said chip on a sectional plane along said axis is D and that said radius is R, $D/4 \leq R \leq 3D/4$.

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3. The spark plug as claimed in claim 1, wherein said chip mainly includes Ir and further includes at least one of Rh, Pt, Ni, W, Pd, Ru, and Os

4. The spark plug as claimed in claim 3, wherein said chip mainly includes Ir and further includes at least one of Rh of lower than or equal to 50% by weight, Pt of lower than or equal to 50% by weight, Ni of lower than or equal to 40% by weight, W of lower than or equal to 30% by weight, Pd of lower than or equal to 40% by weight, Ru of lower than or equal to 30% by weight, and Os of lower than or equal to 20% by weight.

5. The spark plug as claimed in claim 1, wherein said chip mainly includes Pt and further includes at least one of Ir, Ni, Rh, W, Pd, Ru, and Os.

6. The spark plug as claimed in claim 5, wherein said chip mainly includes Pt and further includes at least one of Ir of lower than or equal to 50% by weight, Ni of lower than or equal to 40% by weight, Rh of lower than or equal to 50% by weight, W of lower than or equal to 30% by weight, Pd of lower than or equal to 40% by weight, Ru of lower than or equal to 30% by weight, and Os of lower than or equal to 20% by weight.

7. The spark plug as claimed in claim 3, wherein said fused junction

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layer includes said component of said chip of not less than 35% by weight and not more than 80% by weight.

8. The spark plug as claimed in claim 5, wherein said fused junction
5 layer includes said component of said chip of not less than 35% by weight and not more than 80% by weight.

9. The method of producing a spark plug including a tubular housing, a central electrode supported by said tubular housing in
10 said tubular housing with electrical insulation therebetween, and an earth electrode extending from one end of said tubular housing, comprising the steps of:

placing said chip including a noble metal on a surface of a tip of said earth electrode with contact between an end surface of said
15 chip and said surface; and

welding said chip to said surface by applying a laser beam toward a corner made between said surface and a side surface neighboring said end surface of said chip at an inclined angle to said end surface and said side surface.

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Concluded

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